What is claimed is:

1. A method of aligning an optical fiber, comprising:

observing a first observation point and a second observation point of a cladding removed portion of the optical fiber simultaneously;

rotating the optical fiber about the axis of the fiber while the first and second observation points are being simultaneously observed; and

aligning stress applying parts of the optical fiber so that, between the first observation point and the second observation point, the polarization directions of the optical fiber are oriented in the same direction.

2. The method according to claim 1, wherein the first observation point is a left-biased observation point, and the second observation point is a right-biased observation point.

3. An apparatus for aligning stress applying parts of an optical fiber, comprising:

a fiber-rotating means that rotates the polarization-maintaining optical fiber about the axis of the fiber;

a first observing means that observes a first observation point of a cladding removed portion of the optical fiber; and

a second observing means that observes a second observation point of the cladding removed portion of the optical fiber.

4. The apparatus according to claim 3, wherein the first observing means is a left observing means that observes a left-biased observation point, and the second observing means is a right observing means that observes a right-biased observation point.

5. The apparatus for aligning an optical fiber according to claim 3, further comprising:

a camera, optically connected to each of the first and second observing means, which photographs the first and second observation points; and

a display means, electrically connected to the camera, which displays images of the optical fiber from the first and second observation points or the luminance distributions of the images of the optical fiber.

6. A method of manufacturing a polarization-maintaining coupler, comprising:

rotating a first polarization-maintaining optical fiber about its axis, while simultaneously observing a first and second observation point of a cladding removed portion of the first polarization-maintaining optical fiber;

rotating a second polarization-maintaining optical fiber about its axis, which is parallel to the axis of the first polarization-maintaining optical fiber, while simultaneously observing a first and second observation point of a cladding removed portion of the second polarization-maintaining optical fiber; and

fusion-elongating the cladding removed portion of the first polarization-maintaining optical fiber and the cladding removed portion of the second polarization-maintaining optical fiber.

7. The method according to claim 6, wherein the first and second observation points of the first polarization-maintaining optical fiber are left- and right-biased points, respectively and the first and second observation points of the second polarization-maintaining optical fiber are left- and right-biased points, respectively.

8. An apparatus for manufacturing a polarization-maintaining coupler, comprising:

a first clamp that clamps an end portion of a cladding removed portion of a first polarization-maintaining optical fiber and an end portion of a cladding removed portion of a second polarization-maintaining optical fiber, such that both end portions are maintained adjacent to each other;

a second clamp that clamps an opposing end portion of the cladding removed portion of the first polarization-maintaining optical fiber and an opposing end portion of the cladding removed portion of the second polarization-maintaining optical fiber, such that both end portions and the cladding removed portions of both fibers between the first clamp and the second clamp are maintained adjacent to each other;

a clamp-moving means that moves at least one of the first clamp and the second in the direction of the axes of the first and second polarization-maintaining optical fibers;

a heater that heats the cladding removed portion of the first polarization-maintaining optical fiber and the cladding removed portion of the second polarization-maintaining optical fiber;

a rotator that respectively rotates the first and second polarization-maintaining optical fibers about the axes of the fibers;

a first observing means that respectively observes the first observation points of the cladding removed portions of the first and second polarization-maintaining optical fibers; and

a second observing means that respectively observes the second observation points of the cladding removed portions of the first and second polarization-maintaining optical fibers.

9. The apparatus according to claim 8, wherein

the first clamp is a left clamp and the second clamp is a right clamp; and

the first observing means is a left observing means that observes left-biased observation points of the cladding removed portions of the first and second

polarization-maintaining optical fibers and the second observing means is a right observing means that observes right-biased observation points of the cladding removed portions of the first and second polarization-maintaining optical fibers.

10. The apparatus for manufacturing a polarization-maintaining coupler according to claim 8, further comprising:

a camera, optically connected to each of the first and second observing means, which photographs the first and second observation points of the cladding removed portion of the first polarization-maintaining optical fiber and the first and second observation points of the cladding portion of the second polarization-maintaining optical fiber; and

a display, electrically connected to the camera, which displays images of the first and second observation points of the first and second polarization-maintaining optical fibers or the luminance distributions of these images.

11. A method of aligning the polarization of an optical fiber, comprising:

simultaneously observing a first and a second observation point of a cladding-removed portion of the optical fiber;

rotating the optical fiber about its axis while observing the first and second observation points of the cladding-removed portion of the optical fiber; and

aligning the optical fiber such that its polarization at each observation point is oriented in a prescribed direction.

12. The method according to claim 11, wherein the first and second observation points are left and right observation points, respectively.

13. A method of aligning the polarization of a first and second optical fiber, comprising:

simultaneously observing a first and second observation point of a cladding-removed portion of the first optical fiber;

rotating the first optical fiber about its axis while observing the first and second observation points thereof;

aligning the first optical fiber such that its polarization at each observation point is oriented in a prescribed direction;

simultaneously observing a first and second observation point of a cladding-removed potion of the second optical fiber;

rotating the second optical fiber about its axis while observing the first and second observation points thereof; and

aligning the second optical fiber such that its polarization at each observation point is oriented in the same prescribed direction as that of the first optical fiber.

14. The method according to claim 13, wherein the first and second observation points are left and right observation points.

15. An apparatus for aligning the polarization of an optical fiber, comprising:

a first clamping means for holding a first end of an optical fiber;

a second clamping means for holding a second end of the optical fiber;

an observation means for simultaneously observing at least two observation points on the portion of the optical fiber between the first clamping means and the second clamping means; and

a rotating means for rotating the optical fiber about its axis.

16. The apparatus according to claim 15, wherein

the first and second clamping means are left and right clamping means respectively; and

the at least two observation points are a left and a right observation point.

17. An apparatus for aligning the polarization of an optical fiber, comprising:

a first clamp, which clamps a first end of the optical fiber;

a second clamp, which clamps a second end of the optical fiber;

an observation housing, disposed between said first clamp and said second clamp, comprising:

a first observation element,

a second observation element, and

positioning means for positioning said first observation element and said second observation element simultaneously at a first observation point on the optical fiber and a second observation point on the optical fiber, respectively;

a rotator, which rotates the optical fiber about its axis.

18. The apparatus according to claim 17, wherein

the first and second clamps are left and right clamps, respectively;

the first observation element and the second observation element are left and right observation elements; and

the first and second observation points are left and right observation points, respectively.

19. An apparatus for manufacturing a polarization-maintaining coupler, comprising:

a first clamp, which clamps the first ends of a first and second optical fiber;

a second clamp, which clamps the second ends of a first and second optical fiber;

an observation housing, disposed between said first clamp and said second clamp, comprising:

a first observation element,

a second observation element, and

positioning means for positioning said observation housing at a first position and at a second position, wherein

when said observation housing is in said first position said first observation element is positioned at a first observation point on said first optical fiber and said second observation element is positioned at a second observation point on said first optical fiber, and

when said observation housing is in said second position, said first observation element is positioned at a first observation pint on said second optical fiber and said second observation element is positioned at a second observation point on said second optical fiber;

a first rotator, which rotates said optical fiber about its axis; and

a second rotator which rotates said second optical fiber about its axis.

20. The apparatus according to claim 19, wherein:

the first and second clamps are left and right clamps, respectively;

the first observation element and the second observation element are left and right observation elements, respectively; and

the first observation point and the second observation point are left and right observation points, respectively.

21. The apparatus according to claim 19, further comprising:

a heating element, disposed between said first clamp and said second clamp, which heats the portions of said first and second optical fibers between said first and second clamps.

22. The apparatus according to claim 19, further comprising:

a first imager optically connected to said first observation element;

a second imager optically connected to said second observation element; and

a display means electrically connected to each of said first and second cameras, which receives images of said first and second observation points of said first optical fiber and of said first and second observation points on said second optical fiber from said first and second imagers, and which displays these images.